Operating Instructions

Horn

> 8493/11-1.

STAHL

1 Contents

1 Contents 2
2 General Information 2
3 Safety instructions 3
4 Conformity to Standards 3
5 Function 3
6 Technical Data 4
7 Arrangement and Fitting 5
8 Installation 5
9 Commissioning 11
10 Repair and Maintenance 11
11 Transport and Storage 12
12 Disposal 12
13 Type Examination Certificate (Page 1) 13
14 Declaration of Conformity 14

2 General Information

2.1 Manufacturer

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D-74638 Waldenburg

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2.2 Information regarding the Operating Instructions

ID NO.: 8493601300
Publication Code: S-BA-8493/11-1.-02-en-09/04/2008

We reserve the right to make technical changes without notice.

2.3 Symbols Used

Caution!
This symbol marks notes whose non-observance will endanger your health or functioning of the device.

Note
This symbol marks important additional information, tips and recommendations.

3 Safety instructions

The most important safety instructions are summarised in these operating instructions. They supplement the corresponding regulations which the personnel in charge must study.

When working in areas subject to explosion hazards, the safety of personnel and plant depends on complying with all relevant safety regulations. Assembly and maintenance staff working on installations therefore have particular responsibility. Precise knowledge of applicable standards and regulations is required.

⚠ **As the user, please note:**

- ✗ national safety and accident prevention regulations
- ✗ national assembly and installation regulations (e.g. IEC/EN 60079-14),
- ✗ generally recognised technical regulations,
- ✗ safety instructions and information contained in these operating instructions
- ✗ characteristic values and rated operating conditions on the rating and data plates
- ✗ Instruction plates on the device
- ✗ Any damage may render explosion protection of the device null and void.
- ✗ the devices must be installed only by a trained electrician

Use the device **in accordance with its designated use** and for its intended purpose only (see "Function" on page 3). Incorrect and impermissible use or non-compliance with these operating instructions invalidates our warranty provision. No modifications or alterations to the device, impairing its explosion protection, are permitted. The devices may only be fitted if they are undamaged, dry and clean.

4 Conformity to Standards

The devices comply with the following standards and directive:

- ✗ Directive 94/9/EC
- ✗ EN 50014, EN 50018

☞ The devices are approved for use in hazardous areas zones 1 and 2.

5 Function

Type 8493/11-11 and type 8493/11-12 devices are explosion-protected sources of sound. Sources of sound generate warning signals and can be used in hazardous areas. There are 32 different alarm tones for the first alert phase that can be selected using an internal switch. Each of these tones can be switched externally to the second or third alert phase (see Table 6).

A type 8493/11-11 device produces a sound level in the range of 110 dB(A), a type 8493/11-12 device - in the range of 117 dB(A).

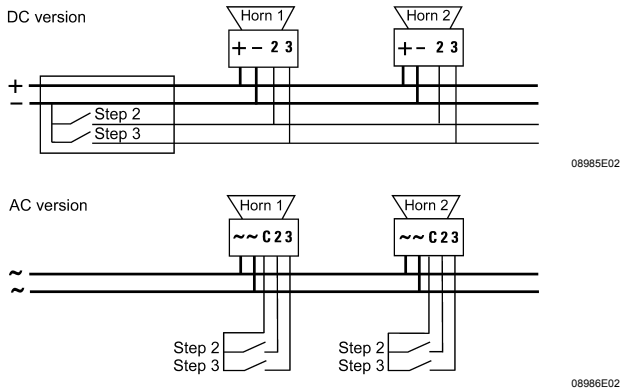
6 Technical Data

Explosion protection	
Gas explosion protection	Ⓔx II 2 G EEx d IIC T4
Dust explosion protection	Ⓔx II 3 D IP 66 T130 °C
Certificates	KEMA 02 ATEX 2150
Volume	8493/11-.1-. : 110 dB(A), adjustable from a distance of 1 m; 8493/11-.2-. : 117 dB(A), adjustable from a distance of 1 m;
Rated operational voltage U_e	DC 12 V ± 25 % 24 V ± 25 % 48 V ± 25 % AC 110 V ± 10 % 230 V ± 10 %

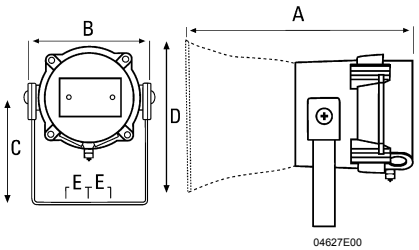
Rated operational current I_e

8493/11-.1-.		8493/11-.2-.	
12 VDC	195 mA	12 VDC	850 mA
24 VDC	265 mA	24 VDC	800 mA
48 VDC	130 mA	48 VDC	420 mA
110 VAC	93 mA	110 VAC	200 mA
230 VAC	56 mA	230 VAC	90 mA

Material	
Housing	Aluminium, colour: red
Horn	ABS plastic, colour: red
Ingress protection	IP 66
Ambient conditions	- 50 °C ... + 55 °C
Cable entries	2 drillings, M 20 or NPT $^1/_2$" possible upon request
Connection type	Terminals for 0.5 mm^2 ... 2.5 mm^2



Dimensional drawings (all dimensions in mm) - subject to alterations

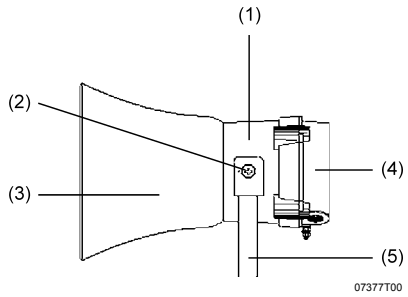


		A	B	C	D	E
8493/11-11-.	EEx d	282	165	145	181	30
8493/11-12-.	EEx d	313	165	145	220	30

☞ Please consult the manufacturer if operating conditions are non-standard.

7 Arrangement and Fitting

7.1 Assembly



(1) Flameproof enclosure
(2) Holding screw, bilateral
(3) Plastic horn
(4) Cover
(5) Bracket

Fig. 1: Horn, schematically illustrated

Installation location:

✗ Assembly in areas where the warning signal should be heard.
✗ Consider the local conditions.
✗ Assembly on carriers supporting the weight of the horn.
✗ Safe assembly on a suitable surface.

Fastening:

✗ by means of screws (M6) through the screw holes (∅ 7 mm) in the bracket (5)

7.2 Adjusting the bracket

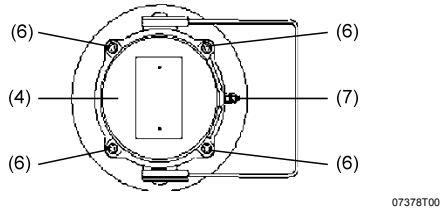
The bracket can be adjusted in the way that enables the horn to produce the alarm signal mainly in the needed direction.

▶ Loosen the holding screws (2), do not unscrew them.
▶ Adjust the bracket (5), step range 18°.
▶ Tighten the holding screws (2).

Caution!
The horn must not move during operation!

8 Installation

Caution!
The devices must be installed only by a trained electrician!
Do not open the devices when there is an explosive gas atmosphere!
To fasten the cover (4) use only class A4-80 M6 screws made of stainless steel.



(4) Cover
(6) M6 cover screws with a lock washer
(7) Earthing terminal, outside

Fig. 2: Horn, cover view

8.1 Opening of the flameproof enclosure

Caution!
Do not open the devices when there is an explosive gas atmosphere!
Avoid damage to the flameproof joint!

- ▶ Loosen four cover screws (6).
- ▶ Keep the screws and lock washers!
- ▶ Carefully pull out the cover (4).

8.2 Closing the flameproof enclosure

Caution!
Before closing the cover check:

- ✗ the flameproof joint for signs of damage and soiling,
- ✗ connection of potential equalisation line between the cast parts,
- ✗ if the O-ring is securely seated.

- ▶ Align the cover screw holes (4) and the drillings of the enclosure.
- ▶ Carefully place the cover. There should be enough time for the air to escape.
- ▶ Completely attach the cover. It may not be set at an angle!
- ▶ Screw in the four cover screws together with inserted lock washers and tighten them crosswise.

Caution!
Do not use the cover screws to put the cover by force into the right position!

8.3 Mains Connection

Caution!

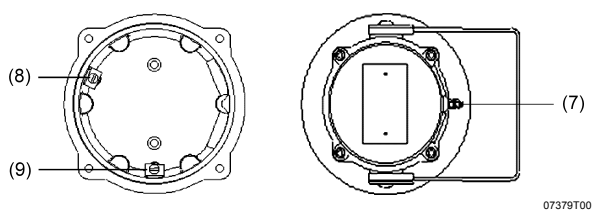
- ▶ Particular care should be taken when making the connections. The connecting cable should comply with relevant regulations and have the required cross-section.
- ▶ When selecting the cable consider the power consumption of each device, the number of horns in one line and the total length of the cable.
- ▶ When removing the insulation of the cable ensure the compliance with prescribed creepage distance.
- ▶ Note that the conductors must not be damaged (nicked) when the insulation is removed.

If the horns are used with high ambient temperature (> +40 °C), the temperature of the connections may rise up to > +70 °C. Therefore use suitable temperature-resistant conductors with resistance up to +95 °C.

☞ Input current depends on the nominal voltage and the frequency of selected alarm tone. The input current listed in the Technical data applies to the continuous tone 440 Hz at appropriate nominal voltage.
The devices with 24 V DC, 48 V DC, 230 V AC, 115 V AC and 110 V AC are equipped with a DC-DC converter, so that the input current is inversely proportional to the input voltage.
The 12 V devices have no voltage regulator, so the input current rises parallel to the input voltage.

Earthing

The horns must be connected to earth with low earthing resistance. The devices have internal and external earth connections on the cover (see Fig. 3).



(7) external earth connection
(8) internal potential equalisation line
(9) internal earth connection

Fig. 3: Internal and external earthing

Use a crimp type socket for the external earth connection (7).

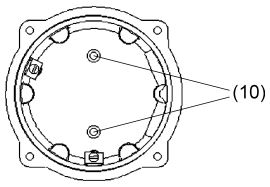
When fastening note the given sequence in order to avoid loosening or twisting of the crimp type socket:

- ✗ Stainless steel washer M5
- ✗ Crimp type socket
- ✗ Stainless steel washer M5
- ✗ Stainless steel M5 spring washer
- ✗ external flat washer
- ✗ M5 nut

The internal potential equalisation line (8) provides a good electrical connection between the flameproof enclosure and the explosion-protected cover.

Cable entries

Caution!
Use only cable entries that comply with the requirements of the standards EN 50018 and 60079-14 and are suited for the used cable type!
If only one of the cable entries is used, the other one should be closed with a stopping plug certified for EEx "d"!



(10) Screw thread for 2 cable entries M 20 x 1.5

Ingress Protection according to IEC 60529

If a higher Ingress Protection (IP66/67) is required, a sealing washer must be fitted under the cable entries.

8.4 Connection

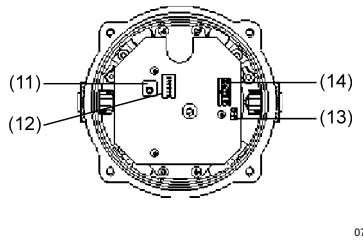
See also "Opening of the flameproof enclosure".

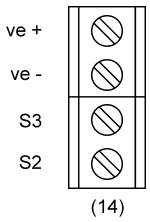
Cables are connected to a terminal strip on the board in the flameproof enclosure.

Cables per terminal	max. cross-section	Note!
1 cable	4 mm^2	When closing the enclosure avoid pinching of the cables especially the ones with the cross-section >2.5 mm^2.
2 cables (e.g. input and output cable)	2.5 mm^2	

Table 3: Cable cross-sections

DC horn, type 8493/11-12

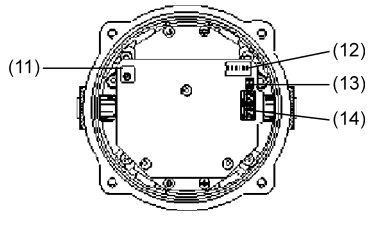


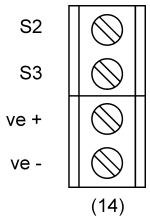


(11) Volume control
(12) Coding switch
(13) Multipin connector
(14) DC connections
ve + Power supply ve +
ve - Power supply ve -
S3 Activation S3
S2 Activation S2

Fig. 5: Connections and terminal assignment of DC horn 8493/11-12

DC horn, type 8493/11-11

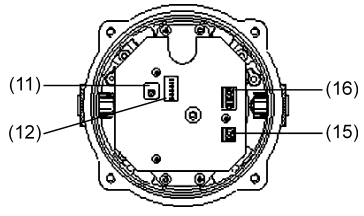


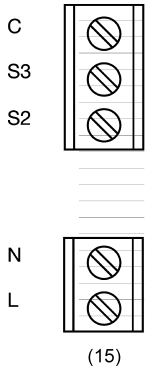


(11) Volume control
(12) Coding switch
(13) Multipin connector
(14) DC connections
S2 Activation S2
S3 Activation S3
ve - Power supply ve -
ve + Power supply ve +

Fig. 6: Connections and terminal assignment of DC horn 8493/11-11

AC horn, type 8493/11-12

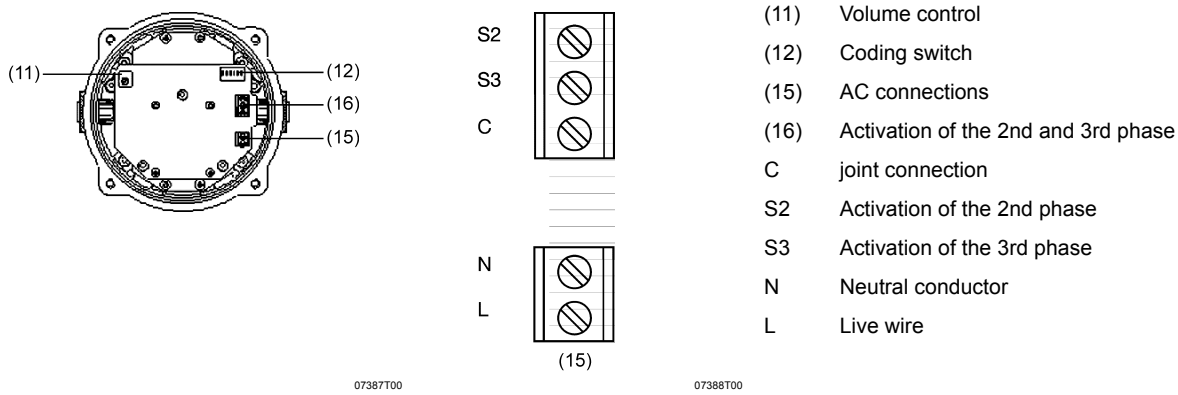




(11) Volume control
(12) Coding switch
(15) AC connections
(16) Activation of the 2nd and 3rd phase
C joint connection
S2 Activation of the 2nd phase
S3 Activation of the 3rd phase
N Neutral conductor
L Live wire

Fig. 7: Connections and terminal assignment of AC horn 8493/11-12

AC horn, type 8493/11-11



(11)	Volume control
(12)	Coding switch
(15)	AC connections
(16)	Activation of the 2nd and 3rd phase
C	joint connection
S2	Activation of the 2nd phase
S3	Activation of the 3rd phase
N	Neutral conductor
L	Live wire

Fig. 8: Connections and terminal assignment of AC horn 8493/11-11

8.5 Selection of tone type and phase (2nd and 3rd phase)

The horns can produce 32 different tones that can be selected for the 1st alert phase. For each of these 32 tones you can select the 2nd and 3rd alert phase. The tones are selected by means of a coding switch (12) (Fig. 5 and Fig.7).

The tone type table (table 6) shows the switch positions for 32 tones and states which tones are available for the 2nd and 3rd alert phase.

DC devices, tone selection for the 2nd and 3rd phase

Activation	Connection -ve (and +ve)	Operating voltage
Phase 1	-	+ve and -ve
Phase 1 + 2	S2	
Phase 1 + 3	S3	
	S2 + S3	

Table 4: Operation of the DC horn in phase 1, 2 and 3

It is possible to activate the phases 2 and 3 by means of +ve or -ve.

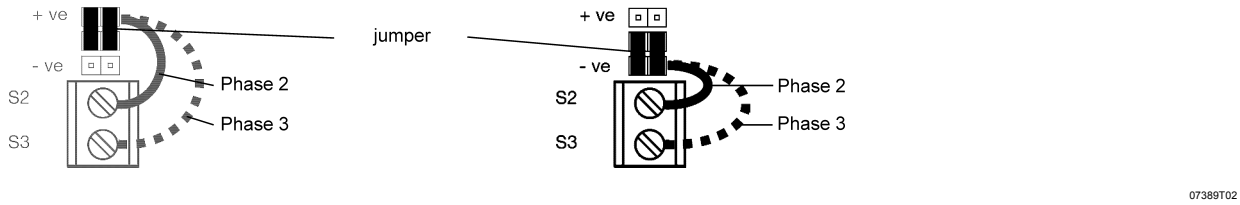


Fig. 9: DC devices, activation of the 2nd and 3rd phase

AC devices, tone selection for the 2nd and 3rd phase

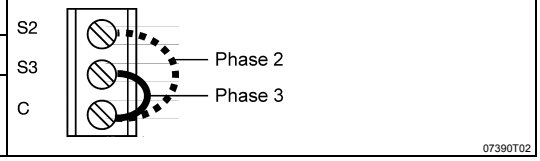
Activation	Connection C (Common)	Operating voltage	
Phase 1	-	L and N	
Phase 1 + 2	S2		
Phase 1 + 3	S3		

Table 5: Operation of the AC horn in phase 1, 2 and 3

Tone types

Tone selection		Settings of coding switch					Selection of the alert phase	
Phase 1	Frequencies	1	2	3	4	5	Phase 2	Phase 3
1	Continuous tone 1000 Hz (toxic gas alarm)	0	0	0	0	0	Tone 31	Tone 11
2	Alternating tone 800/1000 Hz, alternations every 0.25 s	1	0	0	0	0	Tone 17	Tone 5
3	Rising tone 500/1200 Hz, duration 3 s, pause 0.5 s	0	1	0	0	0	Tone 2	Tone 5
4	Wobble tone 800/1000 Hz, switching frequency 1 Hz	1	1	0	0	0	Tone 6	Tone 5
5	Continuous tone 2400 Hz	0	0	1	0	0	Tone 3	Tone 27
6	Wobble tone 2400/2900 Hz, switching frequency 7 Hz	1	0	1	0	0	Tone 7	Tone 5
7	Wobble tone 2400/2900 Hz, switching frequency 1 Hz	0	1	1	0	0	Tone 31	Tone 1
8	Warning hooter 500/1200/500 Hz, duration 3 s	1	1	1	0	0	Tone 2	Tone 5
9	Saw-tooth formed signal 1200/500 Hz, within 1 s	0	0	0	1	0	Tone 15	Tone 2
10	Alternating tone 2400/2900 Hz, alternations every 0.25 s	1	0	0	1	0	Tone 7	Tone 5
11	Interrupted tone 1000 Hz 0.25 s tone, 0.25 s pause (general alarm)	0	1	0	1	0	Tone 31	Tone 1
12	Alternating tone 800/1000 Hz, alternations every 1.14 s	1	1	0	1	0	Tone 4	Tone 5
13	Interrupted tone 2400 Hz 0.5 s tone, 0.5 s pause	0	0	1	1	0	Tone 15	Tone 5
14	Interrupted tone 800 Hz 0.25 s tone, 1 s pause	1	0	1	1	0	Tone 4	Tone 5
15	Continuous tone 800 Hz	0	1	1	1	0	Tone 2	Tone 5
16	Interrupted tone 660 Hz 0.15 s tone, 0.15 s pause	1	1	1	1	0	Tone 18	Tone 5
17	Alternating tone 544 Hz (100 ms) / 400 Hz (400 ms)	0	0	0	0	1	Tone 2	Tone 27
18	Interrupted tone 660 Hz 1.8 s tone, 1.8 s pause	1	0	0	0	1	Tone 2	Tone 5
19	Wobble tone 1400 Hz - 1600 Hz 1 s rising - 0.5 s falling	0	1	0	0	1	Tone 2	Tone 5
20	Continuous tone 660 Hz	1	1	0	0	1	Tone 2	Tone 5
21	Alternating tone 544/440 Hz, alternations every 0.5 s	0	0	1	0	1	Tone 2	Tone 5
22	Interrupted tone 544 Hz 0.875 s tone, 0.875 s pause	1	0	1	0	1	Tone 2	Tone 5
23	Interrupted tone 800 Hz 0.25 s tone, 0.25 s pause	0	1	1	0	1	Tone 6	Tone 5
24	High pitched buzzer 800/1000 Hz, switching frequency 50 Hz	1	1	1	0	1	Tone 29	Tone 5
25	High pitched buzzer 2400/2900 Hz, switching frequency 50 Hz	0	0	0	1	1	Tone 29	Tone 5
26	Simulated bell	1	0	0	1	1	Tone 2	Tone 1
27	Continuous tone 544 Hz	0	1	0	1	1	Tone 26	Tone 5
28	Continuous tone 440 Hz	1	1	0	1	1	Tone 2	Tone 5
29	Wobble tone 800/1000 Hz, switching frequency 7 Hz	0	0	1	1	1	Tone 7	Tone 5
30	Interrupted tone 420 Hz 0.625 s tone, 0.625 s pause (Australian alarm signal)	1	0	1	1	1	Tone 32	Tone 5
31	Saw-tooth formed signal 1200/500 Hz, switching frequency 1 Hz (Prepare evacuation of the platform)	0	1	1	1	1	Tone 11	Tone 1
32	Saw-tooth formed signal 500/1200 Hz 3.75 s tone, 0.25 s pause	1	1	1	1	1	Tone 26	Tone 1

Table 6: Tone types

Cable control (DC devices)

For DC horns you can use cable control with inversely polarised testing voltage.

All DC horns are equipped with reverse battery protection diode. A terminal diode or a terminal resistor can be connected using the connections +ve and -ve. In case terminal resistor is used, its minimum value must be 3.3 kΩ and minimum value of the power must be 0.5 W or minimum value of 500 Ω and power of min. 2 W.

Volume control

All horns except for the 12 V DC devices are equipped with volume control (11) (see Fig. 5 to Fig. 8).

▶ To adjust the sound level use the potentiometer on the board.
▶ Adjust the potentiometer at the far right in order to obtain the maximum sound level.

9 Commissioning

Before commissioning, ensure that:

✗ the device has been correctly installed,
✗ connection has been made correctly,
✗ the device is not damaged,
✗ all screws and nuts are fully tightened.

10 Repair and Maintenance

⚠ **Caution!**
Maintenance and repair work on devices may only be carried out by authorised and appropriately trained personnel.
Before any work commences, the devices must be disconnected from the supply.

☞ Observe the relevant national regulations in the country of use!

The following must be checked during maintenance:

✗ if the cables are clamped properly.
✗ the aluminium enclosure for signs of visible damage.
✗ Compliance with the permitted temperatures in accordance with EN 50014
✗ the flameproof joint
✗ the function according to its designated use.

Maintenance intervals
Regularly check the proper condition of explosion-protected horns regarding their assembly, installation and operation.

Consult the relevant national regulations (e.g. IEC/EN 60079-14) to determine type and extent of inspections.

Plan the intervals so that any defects in the equipment which may be anticipated are promptly detected.

Correction of defects

⚠ **Caution!**
Discovered defects that can affect the explosion protection must be corrected promptly!

▶ Put the device out of operation! (Disconnect the device from power supply!)
▶ Correct the defects!
▶ Put the device into operation again.

Care

Caution!
The housing is made of ABS plastic. To avoid electrostatic charge clean the device only with a moist cloth!

11 Transport and Storage

Transport and storage are permitted only in the original packing!

12 Disposal

Caution!
Observe the national standard for refuse disposal.

13 Type Examination Certificate (Page 1)

KEMA

(1) **EC-TYPE EXAMINATION CERTIFICATE**

(2) Equipment or protective system intended for use in potentially explosive atmospheres - Directive 94/9/EC

(3) EC-Type Examination Certificate Number: **KEMA 02ATEX2150**

(4) Equipment or protective system: **Sounders, Loudspeakers, Speech Sounders Types 8493/1.-..-**

(5) Manufacturer: **R. STAHL Schaltgeräte**

(6) Address: **Am Bahnhof 30, 74638 Waldenburg, Germany**

(7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) KEMA Quality B.V., notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the directive.

The examination and test results are recorded in confidential report no. 2020281.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014 : 1997 **EN 50018 : 2000** **EN 50019 : 2000**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment or protective system according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

(12) The marking of the equipment or protective system shall include the following:

II 2 G EEx d IIC T4 or **EEx de IIC T4**

Arnhem, 20 August 2002
KEMA Quality B.V.

T. Pijpker
Certification Manager

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ACCREDITED BY THE DUTCH COUNCIL FOR ACCREDITATION

Page 1/3

14 Declaration of Conformity

EG-Konformitätserklärung
EC-Declaration Of Conformity
CE-Déclaration De Conformité

KEMA 02 ATEX 2150

Wir (we; nous)

R. STAHL Schaltgeräte GmbH, Am Bahnhof 30, D-74638 Waldenburg (Württ.)

erklären in alleiniger Verantwortung, daß das Produkt	**Hupe, Lautsprecher Typ 8493/1.-..-.**
hereby declare in our sole responsibility, that the product	Sounders, Loudspeakers, Speech Sounders Type 8493/1.-..-.
déclarons de notre seule responsabilité, que le produit	Klaxon, Haut-parleur Type 8493/1.-..-.

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder normativen Dokumenten übereinstimmt
which is the subject of this declaration, is in conformity with the following standard(s) or normative documents
auquel cette déclaration se rapporte, est conforme aux norme (s) ou aux documents normatifs suivants

Bestimmungen der Richtlinie terms of the directive prescription de la directive	**Titel und/oder Nr. sowie Ausgabedatum der Norm** title and/or No. and date of issue of the standard titre et/ou No. ainsi que date d'émission des normes
94/9/EG: Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen 94/9/EC: Equipment and protective systems intended for use in potentially explosive atmospheres 94/9/CE: Appareils et systèmes de protection destinés á êtré utilisés en atmosphéres explosibles	EN 50014:1997 + A1 + A2 EN 50018:2000 EN 50019:2000
89/336/EWG: Elektromagnetische Verträglichkeit 89/336/EEC: Electromagnetic compatibility 89/336/CEE: Compatibilité électromagnétique	EN 50081-1: 1992 EN 50082-2: 1992

Waldenburg, 29.11.2002	Bernd Lembacher	
Ort und Datum Place and date lieu et date	**Leiter Entwicklung** Head of Development Dept. Directeur Développement	**Leiter Qualitätsmanagement** Head of Quality Management Dept. Chef du Dept. Assurance de Qualité

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